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ABSTRACT

Johnson and Wales University (J&W) found a need to deliver a culinary curriculum at the branch campuses (located in Charleston, South Carolina; Norfolk, Virginia; North Miami, Florida; and St. Maarten, Netherland Antilles) equivalent to that offered at the Providence (Rhode Island) campus. A research project studied what delivery system options were available, what the best option for J&W was, how J&W could use distance education to meet the university's needs, and how a distance education option could be introduced to administration. Data collection involved the following methods: a literature review; attendance at workshops and conferences to identify various options available; consultations and interviews with experts in distance education; viewing existing programs; internal consultations with faculty and administration to determine perceived needs; communications with vendors; plan development; and presentation to the university planning committee. A questionnaire was distributed and collected at the conclusion of the presentation; results were used to make revisions to the implementation strategy. A copy of the completed plan for the use of distance education delivery systems was submitted to J&W's president. The plan linked all branch campuses of J&W. The recommendation was to implement a two-way interactive television system that would link all branch campuses. (Appendixes include a 101-item bibliography, questionnaire, the plan presented to the president, and cost factors for compressed video and satellite broadcasting.) (YLB)

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A PLAN FOR THE USE OF DISTANCE EDUCATION DELIVERY SYSTEMS OPTIONS TO LINK CULINARY PROGRAMS AT JOHNSON AND WALES UNIVERSITY

by

Paul VanLandingham

U.S. DEPARTMENT OF EDUCATION
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A Major Applied Research Project presented in partial fulfillment of the requirements for the degree of Doctor of Education

Nova University

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The completion of this project is the result of the sacrifice and cooperation by my wife Betsy. She shared my frustrations and triumphs, she supported, tolerated and encouraged me to achieve my goal. My two sons, Erik and Daniel, had to endure the sacrifice of many days and months as I worked on completing this program.

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Abstract of a Major Applied Research Project Presented to Nova University in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

A PLAN FOR THE USE OF DISTANCE EDUCATION DELIVERY SYSTEMS OPTIONS TO LINK THE BRANCH CAMPUSES OF JOHNSON AND WALES UNIVERSITY

by

Paul G. VanLandingham

June 1993

The changing demographics and growing demands of industry in the field of culinary arts prompted the need for this study. Johnson and Wales University (J&W) was founded in 1914 and is located in Providence, Rhode Island, with four branch campuses in Charleston, South Carolina; Norfolk, Virginia; North Miami, Florida; and the Island of St. Maarten, Netherland Antilles.

There is a shortage of qualified instructors for the specialized programs offered by J&W. Because of this shortage and demographic changes which prompted the opening of branch campuses, not all of the programs offered at the main campus in Providence could be offered at the branch campuses. The need existed to effectively deliver a curriculum at the branch campuses equivalent to that offered at the Providence campus.

There was a definite need to explore alternative types of delivery systems. Administration realized a urgency to implement some type of distance education system as a means to solve this problem. Various types of delivery systems were looked at for the purpose of comparison. Two-way interactive television seemed to be most appropriate because of its ability for immediate response by both faculty and student. Careful study left J&W with three options: microwave, satellite, and compressed video.

The developmental problem solving methodology was used to examine the research questions: (a) What delivery system options are available to Johnson and Wales University?; (b) What is the best option for J&W to meet their unique educational needs?; (c) How can J&W utilize distance education to meet the needs of the university?; and (d) How can a distance education option be introduced to the university administration for possible implementation and evaluation?

A variety of methods were used to collect data for this study. The steps of the process were (a) an extensive literature review was conducted of topics such as distance learning, interactive television, instructional technology, and alternative delivery

systems including interactive television, cable television, telecommunications in education, and educational television; (b) workshops and conferences were attended to familiarize various options available for delivery at J&W; (c) consultations and interviews were conducted with experts in the field of distance education; (d) existing programs were looked at for the purpose of data collection; (e) internal consultations were held with administration and faculty for the purpose of data collection and to determine perceived needs; (f) communications took place with vendors for cost analysis, services available and equipment assessment; (h) a plan was developed based on data collected to link branch campuses; and (i) the first step of the implementation phase included a presentation to the university planning committee. Immediate evaluation was conducted after the presentation, to determine the reaction to the proposed plan.

A questionnaire was distributed and collected at the conclusion of the presentation. Based on the results of the questionnaire, revisions were made to the implementation strategy. A copy of the completed plan for the use of distance education delivery systems was submitted to J&W university's president, John Yena.

A plan was developed to link all of the branch campuses of J&W, after careful analysis of all of the data collected. Immediate feedback of the proposed plan was accomplished through a questionnaire which was used as an assessment tool.

The recommendation was to implement a two-way interactive television system which would link all of the branch campuses. The expectation is that this system will provide an equivalent curriculum to that currently being offered to students in the culinary arts program at the Providence, Rhode Island campus.

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Chapter 1

INTRODUCTION

Johnson and Wales University (J&W) is a private university with a mission to meet the needs of students and employers in fields with high growth potential and to prepare students to contribute significantly to society. J&W was founded in 1914 and is located in Providence, Rhode Island, with four branch campuses in Charleston, South Carolina; Norfolk, Virginia; North Miami, Florida; and on the island of St. Maarten, Netherland Antilles.

J&W offers undergraduate and graduate programs in culinary arts, technology, hospitality, and business. The University's mission includes offering equivalent high quality career education programs which are somewhat customized to the unique needs of employers and students in the service areas at the five sites.

The College of Culinary Arts (CCA) presently offers an Associate in Applied Science (AAS) program at four campuses: Providence, Charleston, Norfolk and North Miami. The AAS in culinary arts is the only degree offered at the Norfolk and North Miami campuses. Future plans are for the implementation of a Bachelor of Science degree (BS) in culinary arts. The initiation

of this program, which will only be offered at the Providence, Rhode Island campus, will be the first of its kind offered in this country or anywhere else at the present time.

J&W has both undergraduate and graduate programs in the area of technology, hospitality management and business. These programs are only offered at the main campus in Providence, Rhode Island.

The present enrollment at the Providence campus is approximately 8,500 students. The goal of the administration of the university is to enroll 10,000 students by September of 1994. Currently, each branch campus does not have enough qualified professors to deliver all of the programs which are now available at the main campus in Providence.

Statement of the Problem

The problem at J&W was an inability to deliver a culinary curriculum at the branch campuses equivalent to that offered at the Providence campus. The culinary curriculum at J&W is an intense, two year program emphasizing the fundamentals of cooking, baking, and academically related subjects necessary to prepare graduates for entry level positions in the field of culinary arts.

Background and Significance

The reason for this dilemma was the scarcity of qualified personnel needed to deliver the culinary curriculum. As a result of the specialized nature of the curriculum being offered at J&W, it is extremely difficult to find individuals who possess both the culinary as well as the pedagogical skills needed to offer students the highest quality culinary education available.

According to (Lefever, 1991) between 1987 and 1990, 620 faculty job announcements were made by J&W and other schools offering similar programs throughout the United States. Back in the 1970's, there were only 30 programs offering hospitality or hotel and restaurant management. Today, there are over 160 four year programs and 700 two year programs all competing for faculty from the same talent pool.

Another factor contributing to the faculty shortage is the demand for both teaching and industry experience as a condition of employment. These factors seem to be much more critical for this profession than for the more traditional disciplines. They will remain critical for future faculty members because the teaching experience is always difficult to develop while the industry

experience is often quite time-consuming for culinary arts professionals to acquire.

A need existed to provide students at all branch campuses equivalent, high quality education, as is offered to students who attend the Providence campus. This presented a great challenge to the culinary administration at J&W. Robert Taylor, an educational consultant, who was hired as a consultant to facilitate J&W's strategic plan entitled Vision 2000, felt that one issue needing to be addressed at J&W was the lack of technology linking all of the branch campuses. Since that time, the integration of modern technology as an aid in the delivery of culinary curriculum has been the focus of discussions by administrators at J&W. The discussions included the feasibility of implementing some type of two-way interactive technology as a means of meeting this critical need. The feeling was that two-way interactive television would afford live interaction between both teachers and students, while providing the equivalent course content to that of the J&W's Providence campus.

The results of this study are crucial to the culinary school. They will allow J&W to expand its curriculum to include a Bachelor of Science degree in

culinary arts by September, 1993. There was a strong commitment by administration for this study (Appendix A).

Research Questions

Several questions regarding distance education as a medium for the transmission of culinary curriculum were addressed in this MARP.

1. What delivery system options are available?
2. What is the best option for J&W to meet their unique needs?
3. How can J&W use distance education to meet their needs?
4. How can a distance education option be introduced to administration for possible implementation and evaluation?

Definition of Terms

There were several terms that needed further clarification due to the technical nature of the material relating to this study.

Band Width On Demand. This is a feature which allows the user to adjust the clarity of a picture on a television screen, using fiber optics as a means of delivery of two-way interactive television.

Cable TV. The technology of transmitting programs to subscribers through coaxial cable rather than air

Curriculum. The sum of all experiences involved in ones education

Downlink. Industry jargon for a satellite receiving dish or for a process of beaming signals from a satellite down to earth stations

Dual Mode. This is a college or university which uses both traditional and distance education delivery systems to deliver curriculum.

Fiber Optics. This refers to a technology that transmits voice, video, and data sending digital pulses of light through hair-thin strands of flexible glass.

Footprint. This is the geographic area on the globe in which a given satellite's signal can be received.

Geosynchronous Orbit. This is the altitude of 22,300 miles above the equator at which a satellite's orbit is synchronized with the earth's rotation, making the satellite appear stationary.

Instructional Television Fixed Service (ITFS). This is a group of TV channels in the ultra-high frequency range set aside for educational use. ITFS is technically identical to multi-point distribution service (MDS).

Kilobyte Per Second (KPS). The amount of light that passes through a fiber optic cable. The higher the KPS the clearer the picture.

Microwave. A high-frequency radio wave (above 500 megahertz) that can be used for the transmission of TV signals (as in MDS). Microwaves are easily disturbed by trees and buildings in their path causing considerable interference to the subscriber.

Two-way Interactive TV. Television that allows the viewers to participate and the teacher to respond immediately

Uplink. The beaming of a signal from the earth to a satellite

Video Conference. A temporary private TV network in which large screen TV sets, cameras, and satellite downlinks and uplinks are used to join numerous remote locations, for anything from a business meeting to an entertainment event

Assumptions

Several assumptions have been made regarding the study. It is assumed that the manpower shortage of Certified Culinary Educators (CCE's) still exists. It is also assumed that J&W administration will perceive

the findings of this study on distance education delivery systems as an answer to their needs. Additionally, it is assumed that J&W will be able to afford the costs to initiate this program. Finally, it is assumed that the technology available will meet the specialized needs of J&W.

Limitations of the Study

The study was limited by the fact that it concerned the specific needs of J&W. Another limitation was that the technologies that applied to the geographical needs of J&W are quite different of those of many other institutions. An additional limitation may be that although distance education is perceived as extremely important, implementation of the program may not precede other priorities already on the administration's fiscal agenda.

Chapter 2

REVIEW OF THE LITERATURE

Challenges Facing Vocational Education

Vocational education, and perhaps all education, to a certain extent, exists to provide a skilled workforce for society (Groff, 1986). Providing this workforce is one of the many challenges facing vocational postsecondary education today. However, it is also important to have a valid assessment of workforce needs, as explained in the Outlook for the 90's, The State of Maine (1989). This provides an occupational supply and demand notebook allowing educators to forecast needs in various job areas and to plan for training of people to fill those positions.

"Matching workforce needs to human skill availability may be the next challenge facing education" (Pipho, 1989). Planning for this workforce involves developing "scenarios for a preferred alternative future" (Groff, 1989). Chefs today must be "change agents" (Groff, 1985).

The Vocational Education Act had a major impact on the construction of vocational schools nation wide (Groff, 1991). Not only did the facilities improve but the range of courses being offered was overwhelming. At

the time this was happening in this country, there were very few schools that offered programs dealing with vocational culinary arts. Today, the number of culinary schools that exist in the United States numbers in the hundreds (Shaw, 1990).

The National Consortium of Competency Based Education was formed in 1973 (Groff, 1991). This would change the form of instructional methods from the pre-existing occupational instruction to competency-based. Occupational competency is defined as: "A specific job skill that an employer expects an employee to possess in order to obtain and maintain employment (Perry, 1984).

The role of the chef has taken on many new responsibilities (VanLandingham, 1991). Chefs today must be more than good cooks. When asked what is a chef, McIntosh (1990) writes:

> chef (shef), n. creator; master of innovation; historian; pleasure-giver; recognition-seeker; time-manager; perfectionist; cajoler; consoler; stress victim; craftsman; accountant; student; teacher; comforter; referee; liaison; surrogate parent; story-teller; dishwasher; patriot; preacher; and whipping post (pp. 22-23).

Many things are needed to be a success in the field of culinary arts today. As a result, a solid vocational culinary education has become important.

As a result of an increase in these vocational programs, universities also must meet the crisis of the faculty shortage which has developed and will only get worse, particularly in certain fields (Parnell, 1990). The demands and responsibilities of the present day executive chef require that many more things be included in culinary education today. The number of culinary programs available in the United States has increased almost 300% in the past 20 years (Shaw, 1991). This increased competition has only compounded the problem in the search to find qualified faculty.

Techniques used in the presentation of materials over the years also have become more refined. Today, as a result of large advances in technology, educators are devising new ways for the delivery of information regarding vocational education. Changes in demographics, coupled with the demand for quality vocational education, have necessitated the opening of branch campuses by J&W to compensate for the shifting population growth toward the south and western United States.

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Additional factors which prompted these changes were the increase in the average age of the post-secondary student population, substantial increases in the number of females and minorities attending college, and the escalating costs of a college education in America today. These factors now signal that new means of providing students with quality education should be explored. American colleges and universities, by the year 2000 are going to be lean and mean, service-oriented and science-minded, multicultural and increasingly diverse if they intend to survive their fiscal agony (Elson, 1992).

Traditional Education vs. Non-Traditional Education

A question which existed was whether non-traditional distance education could be a viable alternative to traditional education. Distance education is defined as "any formal approach to learning in which the majority of the instruction occurs while the educator and the learner are at a distance from one another" (Garrison and Shale, 1987).

The term "distance education" may have first appeared in the 1892 catalog of the University of Wisconsin (Rumble, 1986). The term "distance education" was reportedly used by the director of the University of

Wisconsin Extension, William Lighty, in 1906 (Moore, 1987). The term was popularized by the German educator Otto Peters in the 1960's and 1970's. Although distance education has been around for many years it has not always been accepted as an alternative to the traditional classroom. This feeling is especially true with many of the older more traditional educators. The Educational Resource Center (ERIC) did not use the term distance education as a descriptor until 1983.

Students of the 90's are interested in practical, comprehensive, and flexible educational opportunities which are compatible with, and not intrusive to, their lifestyles (White, 1985). What is needed is a new system of part-time campus free education that allows students to pursue their professional goals, while keeping their lives intact (Ostertag, 1991). These recommendations are supported by Hodgkinson (1985) who claimed that the demographic changes in the society warrant serious examination of the graduate programs currently available to the adult learner. The delivery of distance education is one means to accommodate the needs of these students.

Some of the most common characteristics found in non-traditional education have been shorter residency

requirements, flexible scheduling, independent study and correspondence courses. The value of these types of programs has been scrutinized by many conventional educators.

Education must keep pace with the changing times and demographics (O'Banion, 1989). This is more important today. Failure to keep pace with the changing times may spell disaster for many post-secondary institutions.

Although described as a university providing quality education through a non-traditional system, there is still some reluctance to delve into high-technology by some faculty at J&W. The appropriateness of this type of system has also been questioned outside of the college community by parents and students.

Pinar (1978) defines traditionalists as those individuals who value service to practitioners above all other concerns. Traditionalists also believe that the only approach to education is in the classroom. The method most appropriate for the delivery of conventional education is by lecture with face-to-face interaction between the student and instructor. Deviation from this approach by institutions using non-traditional methods of delivery have caused some apprehension by the

prevailing academic society. The issue of quality and academic legitimacy have been one of the major issues raised relative to non-traditional programs by many of the hard line traditionalists.

Dressel (1978) expresses concern over the question of immediate relevance versus the acquisition of a significant body of knowledge. However, the adult learner today seems to be more concerned with developing practical skills that can be used in his/her chosen career, according to Knowles (1992).

Verduin and Clark (1991) describe many alternative non-traditional delivery systems that may be used to effectively provide a broad variety of programs. Several methods of delivery were analyzed during this study. Video disks, audio tapes, and CD-ROM are just a few examples of technology that could be used to enhance distance education.

Institutions are using various prototypes of distance learning to provide instruction to a widely diversified student market across the United States (Ostertag, 1991). Considering the demographic predictions, coupled with J&W expansion to multiple branch campuses, distance learning as a method of instructional delivery will have to play an increasingly

important role in the future. This will change the role of the culinary educator of the future. There will be a need to act more as a facilitator and an expert guide to the course rather than gate keeper of sacred knowledge (Granger, 1988). Tomorrow's teacher will go from sage on the stage to guide on the side (Dennison, 1992).

Academic Credibility

Academic credibility was a critical issue in the early days as these new distance learning institutions confronted the credentialing monopoly held by established colleges and universities. Most now have demonstrated the expectations and standards established for graduates of open distance learning universities area at least as rigorous, if not more so, than those of existing traditional students attending postsecondary institutions (Granger, 1989).

The Council on Postsecondary Accreditation (COPA), in 1984, issued a "Policy statement on Accreditation and Authorization of Distance Learning Through Telecommunications." It stated that telecommunications programs must fit into the context of the institutions missions, that rigorous outcome assessment measures must be developed to establish effectiveness of such programs, and that state authorization activities should

be the initial step in, and a prerequisite to accreditation. The fact that J&W is licensed in several states will mean that should this type of delivery system be implemented, J&W's program would come under much more scrutiny than most universities.

The most important challenge taken up by distance educators is to provide at a distance an educational experience comparable to the conventional one in quality, quantity, and status (Ostertag, 1991). It is felt that J&W can still maintain the same academic objectives while implementing this type of technology (VanLandingham, 1992).

A dual-mode system using both traditional methods and non-traditional will be utilized. Traditional methods of instruction would still remain in place for many of the programs that are offered at the university. According to Tresman, Thomas, and Pinder (1988), in these dual-mode settings transfer from classroom teaching to distance learning has often resulted in recognition that materials developed for distance learning could be used successfully in the traditional classroom.

One dilemma which has been facing college administration throughout the United States is getting

faculty to volunteer to teach via distance education (Arnold, 1992). Many faculty members feel comfortable with the traditional teaching styles and do not like to experience change. Those faculty who volunteer to teach via this new method are, however, usually more effective (Verduin and Clark, 1991).

Teacher Training

J&W traditionally has not engaged in any type of in-depth teacher training. Although a J&W has a Bachelor of Science program in secondary culinary education, faculty members are not required to participate. Teaching in a distance learning environment will require certain specialized training. Carl (1991) explains that similar to traditional education, one of the weak links in distance education is teacher training. Teaching from a distance is very different from traditional methods. When teaching by distance technology one must be better prepared in terms of details, be more precise, and pay more attention to organization (Arnold, 1992).

It is suggested that bringing in experts in the field to train faculty in the delivery of distance education would be valuable. Marker and Ehman (1989) recommend bringing in support personnel to assist in the

training process. Taking the time to provide faculty with the proper training to deliver distance education programs will be a key to the success of J&W.

Student Success

One issue that is important to administrators is the student success rate. That is the number of students who actually complete a specific degree program. Research shows (Verduin and Clark, 1991), that 75% of those students that complete their first course via distance education will successfully complete the program. The national average for completion of traditional education programs is 63% (Verduin and Clark, 1991).

Statistics gathered by the student success department at J&W show that one frequent reason for students failing to complete the culinary program is their inability to adjust to being away from home. The implementation of a distance education program may be a solution to this problem which would allow students to successfully complete their education closer to home.

Evaluation and Justification of Delivery Systems

Evaluation

Distance delivery as a means of education had to be evaluated to insure that distance delivery education

would provide culinary students at J&W with high quality career education. Evaluation is defined as a process of making judgements or applying values in a given situation (Verduin and Clark, 1991). There are several important reasons for evaluation in distance education (Thorpe, 1988) because of the fact that there is little face-to-face interaction, it is difficult for educators to gather information about learners, their needs, their wishes, and desires as in a conventional educational program. Evaluating these programs can provide information needed by (a) legislative bodies for licensing, (b) funding agencies to ensure financial support, (c) businesses for the support of industry, (d) colleges whose interest may be the formation of a consortium, and (e) other clients such as students, to assure high quality and because of the fact their goals are met (Thorpe, 1988).

Three types of evaluation of distance education programs must be considered (Grotelueschen, 1980). The first deals with past outcomes or activities that generally lead to justification or accountability of program operations. This form of evaluation, which Scriven (1980) terms summative, gives quantitative and qualitative data at the summation of distance programs

activities and can present a global review of what happened. Evaluation of this type is used after a program has been in place for a long period of time and it would not apply during the early stages of the program.

The second form of evaluation focuses on current program efforts and is used to determine if a program needs improvement. The evaluation process seeks information about the programs and monitors it during its implementation stage and is conducted to ascertain any problems or shortcomings that need remediation. This evaluation, termed "formative" by Scriven (1980), takes place when distance education activities are still fluid and when new directions can still be defined by those educators using it.

The third form, by Grotelueschen (1980), is future-oriented evaluation which helps decision-makers to plan for a future distance education program. Although similar to a needs assessment in looking at potential, it can go beyond such assessment to look at potential alternatives and ascertain their merits. The most important factor to be considered is that distance educators provide an educational experience comparable to, if not better than, a conventional one in the areas

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of quality, quantity, and status. This will allow for more distance education programs to be accepted by traditional educators who, in the past, were reluctant to recognize this as a viable alternative educational delivery system.

Evidence of the effectiveness of distance education further enhances its credibility. One of the best known distance education programs today is the British Open University (BOU), which enrolls over 150,000 students. BOU is described as the most lavish and affluent model of distance education (Granger, 1989). BOU also sets the standard which other institutions have tried to emulate.

BOU has total independence, a generous budget, and the strong support of the British government. Graduates and faculty of BOU are well-respected and distinguished in the arena of higher education in Britain. The hiring of many Nobel and Pulitzer prize winners as faculty helped ensure their respect.

The University of Maine is a model for two-way distance education (Elson, 1992). The University of Maine, in initiating distance education, made a decision that all students, no matter where they were, would have to be able to interact spontaneously with their

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instructors and with each other (Connick, 1992). Many problems plagued Maine's state university system prior to the initiation of two-way delivery systems (Paulson, 1990). Maine ranked at, or near the bottom of, several categories in national educational statistics. It ranked 49th in the number of high school graduates who continued on to higher education and 50th in the number of adults who participated in post-secondary continuing education (G. Connick, personal communication, September 25, 1992).

A 1986 study showed that the number of students in Maine enrolled in post-secondary associate degree programs was half of the national average. Since the introduction in 1989 of the University of Maine Educational Broadcast System, these figures have dramatically improved; Maine now ranks 39th in each category (Connick, 1992). These figures confirm the impact that distance education and the initiation of two-way interactive television has had on the university system in Maine.

Justification

One area that is of importance when trying to justify the adoption of distance education to university administration is its effect on enrollment. The Adult

Learning Service (ALS) worked with public television, colleges, and independent producers to develop new courses. PBS anticipated about 20,000 new adult learners would sign up for its initial 1981-1982 academic year. Instead, 53,000 students nationwide enrolled for college credit telecourses at 55 colleges and universities while working in cooperation with 237 public television stations. By the end of 1988, over 1,500 colleges and 300 public broadcast stations had teamed up to register over a million enrollments in ALS-distributed telecourses (Public Broadcast Service, 1989).

The financial impact that distance education can have on an institution also can have a tremendous effect. VanLandingham (1993) states that there are several areas that would be greatly effected by distance education. First, academic costs could be lowered through the implementation of distance education. After the initial start-up costs the overall costs become significantly less.

Second, facilities cost are reduced because the students do not have to be physically present. The need to provide housing for students is reduced. This means fewer dormitories and dining facilities.

Third, personnel costs are less. While the student body would increase, the faculty positions would not be lost since those faculty members who would be involved in the delivery of distance education would possibly have a larger student-teacher ratio. This would result in being able to reach a larger audiences via interactive television.

Fourth, the implementation of interactive TV could be utilized by admissions to increase enrollment. This type of program could be marketed to working adults whose demanding schedules might not otherwise allow them to further their education.

History and Uses of Two-Way Communication

The invention of loud-speaker telephones in the United States in the late 1950's increased the growth of group study at a distance (Pinches, 1975). A variety of teleconferencing possibilities have been created since then, by the development of electronic switching devices for use in telephone communication (Brown and Brown, 1984). The process of deciding on a particular technology is further complicated by the fast-paced changes in this field. Technology that is new today may be obsolete in just a few years due to the many improvements in this field.

Telephones can be used to transmit more than just voices. Telephones lines may be utilized to carry many modes of communication such as audiocassette, videocassette, printed, written, and visual materials. Distance education via telephone wire or channel may involve signals enabling one-way visual communication through an electronic blackboard or by audio communication through lectures or tapes. Also, two-way communication or interaction is attainable through single or multiple telephone conversations and by computer. The telephone system is only one alternative to be considered in the implementation of two-way interactive television.

Perry (1984) surveyed 304 institutions providing 468 courses offerings in 80 nations and found telephones in use at all educational levels. The telephone was employed more in developed regions such as Europe and North America, where institutions surveyed used the telephone at a 29% and 43% rate, respectively.

Only five percent of Asian programs used telephones. No African programs used the telephone at all. Overall use of the telephone is approximately 22%. It was found that six out of nine Distance Technology Universities (DTU's) surveyed used telephone (Rumble and

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Harry, 1982). The three universities that did not use the telephone were in three developing nations: Venezuela, Pakistan, and the Peoples Republic of China.

Takemoto (1987) believes teleconferencing embodies all of the potential requirements of an effective educational medium - accessibility, quality, integration, control, and interactivity. Teleconferencing has already been used as a practical means of rendering continuing education to pharmacists (Roeder, 1983), piano teachers (Hugdahl, 1980), social workers in remote parts of Alaska (Kleinkauf and Robinson, 1987), and foster parents and social workers in Montana (Deaton and Clark, 1987).

The adaptation of teleconferencing to culinary education may be quite feasible. Technical breakthroughs and adjustments to technical limitations have greatly improved the quality of service.

Television is another consideration, in addition to the telephone system. One advantage is that in broadcast television, the signal is beamed through the air to TV receivers without the use of wires or cables. This would eliminate some of the limitations of being in an area that was not wired to receive or transmit through telephone lines. Most educational television in

the United States today is transmitted by open broadcast. A study by the U.S. Department of Education (1989) revealed that practically every American household (99%) has a telephone set. Of the 344 institutions surveyed, 36% reported that off-campus use of broadcast TV for Public Broadcasting (CPB) showed a slightly lower figure of 32% in a nationwide survey (Whittington, 1987.)

Delivery Systems Options

The primary focus of J&W was to look at various types of delivery systems. Several systems were studied in this MARP to evaluate their effectiveness to meet the unique needs of J&W. After careful analysis of all of the data it was felt that two-way interactive television was the most appropriate system for use by J&W. It was then determined that further study of the various types of two-way interactive television systems was necessary.

Two-way interactive television permits viewer participation. Examples of this are two-way cable, videotex, or the optical video disc.

Cable Television

Cable TV is another option available for consideration. The first cable television system, or CATV, was built in the United States in 1953. Over 1000

cable TV systems were in operation by 1964 throughout the United States.

Educational cable TV was facilitated by the 1972 FCC rule requiring 20 channel capability by cable operators. Four kinds of access were provided to the public by cable systems: public, educational, governmental, and leased (Federal Communications Commission, 1972). Cable television must boost and reboost signals as they send them to subscribers. As the signals are boosted, power increases, but also noise in the signal tends to increase as a result, the effective range of cable TV is approximately 20 miles. This would still be feasible for connecting properties on a J&W campus because no properties are currently in excess of 20 miles from any point where a signal would be reboosted.

The number of telecourses combining video, text, and other sources increased with the creation of the PBS Adult Learner Service in 1981. In the same year publisher Walter Annenberg made a long term grant of $150 million to the Corporation of Public Broadcasting for the funding of projects using telecommunications and informational media to enhance the quality of higher education for working adults (Stern, 1987).

Niemmeyer (1985) located 71 post-secondary television consortia enrolling 100,000 students in 1982. All of this data could be of importance when considering the possible future consequences on student enrollment.

Microwave Systems

Microwave is another type of broadcasting similar to CATV. The advantage of microwave TV is that it can reach nonwired viewing sites. Instructional television fixed service (ITFS) use lower power microwave broadcasts to serve up to 25 miles away. The ITFS system has proven itself to be valuable to state college systems or community college groups that are located within a radius of 25 miles. This system would not satisfy the needs of J&W.

Digitized or Compressed Video System

Penn State, Ohio State, and some other universities are beginning to use digitized TV signals, which being compressed, take up less space in a signal, allowing the carrying of additional audio and data signals that may pay for the cost of the video portion. Two-way video transmissions may be more affordable in the long run using compressed signals. However, start up costs are high and may prove prohibitive to some subscribers. Acker and Albarran (1988) predict that integrated

service digital networks, including compressed video, will supplement analog telecommunications networks. This type of system would satisfy the current needs of J&W.

Satellite Systems

Satellite broadcasting came about after the development of geosynchronous satellites in the 1960's. This has led to the routine use in American education of TV transmissions relayed via telecommunication satellites. Most satellites involved in educational broadcasting transmit to receiver with 10 foot dishes, usually serving customers such as cable TV companies, stockbrokers, and libraries. The satellite beam is focused into a region-sized footprint. The cost of the receivers and the satellite power requirements are kept within reason as a result of the use of the footprint making this method more attractive to educational institutions.

Costs tend to dictate group viewing sites when such multi-point distribution services are used for educational purposes (Verduin and Clark, 1991). The formation of a consortium may be a consideration for colleges and universities, such as J&W. The use of a satellite system would be very beneficial should the

program expand beyond the boundaries of the branch campuses. Utilization of a satellite system would bring J&W's unique curriculum into the homes of many students living in rural settings not normally serviced by a college or university. This would allow these students the ability to receive high quality culinary education.

Summary

The review of literature has shown distance education to be a highly respected and viable alternative to traditional education. Although some problems do exist, distance education would certainly be a solution to satisfy the need to link the culinary programs at J&W.

Analysis of the data collected indicates that many options are available for the delivery of post-secondary culinary education. However, distance between branch campuses and start up and operating costs limits the options available.

Careful analysis of data indicated that there are many other areas in which J&W could utilize two-way interactive communication in addition to the delivery of education to improve the overall efficiency of the university. The added benefits will weigh heavily on the administration's decision regarding implementation.

Chapter 3

METHODOLOGY AND PROCEDURES

The developmental problem solving methodology was used in this study. A variety of methods were used to collect data.

Literature Review

An extensive review of literature was conducted to gather information on distance education and technology relating to distance learning. Journals on technology, distance education, and two-way interactive television were read and data were analyzed.

Specific journals such as Change, The Community College Journal, The American Journal of Distance Education, Educational Technology, Telephony, Telephone Engineer and Management, and the Training and Development Journal were monitored for pertinent data applicable to this project. Additional magazines such as Newsweek, Time, and U.S. News and World Report were examined because of articles that related to this study.

ERIC searches using descriptors such as distance learning, interactive television, instructional technology, alternative delivery systems, cable television, telecommunications in education, and educational television were done. This collection of

data was important in the development of this MARP. Most of the information was retrieved by the Nova Information Retrieval Service (IRS), which provided microfiche and hard copies. They provided valuable information which proved to be important to this study. Colleagues and faculty involved in the project also assisted in collecting relevant literature.

Internal Input

-- J&W culinary administration were consulted for advice and guidance in this project. Individuals from other schools within J&W were also contacted and input was solicited in order to gain a broader perspective as to the impact distance education would have on the entire university. In addition, the J&W strategic plan was reviewed.

External Input and Consultations

Consultations with experts from outside of J&W also took place. These persons were chosen because of their experience in education and technology. They included George Connick, William Mason, Doug Goodgame, Robert Arnold, and Pamela Pease.

Distance Education Models

Several institutions where distance education is taking place were identified. Models were sought from

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the University of Maine at Augusta Center for Distance Education, University of Central Florida, and Miles Community College, Montana, and reviewed.

Two-Way Interactive TV Experts

Several experts in the field of distance education were interviewed because of their experience in the area of two-way interactive television and its use in education and their ability to offer advice relative to this project. Laura Lenau of Miles Community College and Lowell Roberts from Empire State University were contacted for their input.

Conference and Event Attendance

The sixth annual conference, "Global Trends In Distance Education" (September, 1992), held at the University of Maine at Augusta was attended. The conference theme was on distance education, training, and interactive technologies.

The Florida Vocational, Adult and Community Education Conference and Trade Show (August, 1992) in Orlando, Florida was also attended. The conference was attended for the purpose of meeting other vocational educators who were using various instructional technologies. Participation in different events were very important for the purpose of gaining practical

experiences. Several national town meetings sponsored by the United States Department of Education and moderated by former Secretary of Education Lamar Alexander were observed. A Public Broadcasting Company (PBS) teleconference which was sponsored by the College Board was also viewed.

Vendors

Several vendors were eventually contacted as a result of this study. Representatives from these companies made on site visits for the purpose of attaining data which would assist in the design of a two-way interactive television system. Comparisons were made of the various vendors. The types of technology, technical support, maintenance, and training programs offered by these vendors were also compared.

Bids where received from several vendors for analysis. The bids were analyzed for the purpose of making a recommendation to J&W President John Yena.

Distance Education Plan

The literature review, visits to colleges and universities using distance technology, attendance at conferences, practical experiences, interviews with experts in the field of distance education, personal communications with members of the J&W administration

and faculty, and the analysis of bids received from vendors all went into the development of a plan to link the culinary programs at J&W. The plan includes five major sections and can be found in Appendix C.

J&W Presentation

A presentation on the distance education plan was made to the administration and faculty. The presentation focused on the plan which was developed titled "Distance Education for Johnson and Wales." The presentation focused on how two-way interactive television works, how J&W could use interactive television, additional benefits to J&W, costs, threats, and comparison of technologies.

Validation of Presentation

A questionnaire was developed for immediate feedback on the presentation and can be found in Appendix B. The questionnaire was reviewed by the dean, assistant dean, and John Conklin of the University of Connecticut for validation of the instrument.

J&W Evaluation of Presentation

The questionnaire was administered to J&W administrators and faculty who were present. The purpose of this questionnaire was to validate the plan

to link the culinary programs at J&W. The data were analyzed and summarized. The final plan was submitted to Dr. John Yena, president of J&W, for consideration for implementation.

Chapter 4

PRESENTATION OF RESULTS

Literature Review

The literature indicates that there are several challenges facing vocational education and perhaps all of education. Vocational education and perhaps all education exists, to a certain extent, to provide a skilled workforce for society (Groff, 1986). Literature also revealed that "Matching workforce needs to human skill availability may be the next challenge facing education" (Pipho, 1989, p. 26).

The number of culinary programs in this country have increased dramatically. As a result of the increase in vocational culinary programs, universities also must face the shortage of qualified faculty, a shortage which has developed and will only get worse, especially in certain fields (Parnell, 1990). Culinary and hospitality education are fields experiencing this shortage of faculty.

Techniques used in the presentation of materials over the years also have become more refined. Today, as a result of large advances in technology, educators are devising new ways for the delivery of information regarding vocational education. Changes in

demographics, coupled with the demand for quality vocational education, have necessitated the opening of branch campuses by J&W to compensate for the shifting population growth toward the south.

Additional demographic factors which prompted these changes were the increase in the average age of the post-secondary student population, a substantial increase in the number of females and minorities attending college, and the escalating costs of a college education. These factors signaled that new means of providing students quality education should be explored.

Verduin and Clark (1991) describe many alternative delivery systems that can be used to deliver a broad variety of programs. Several of these methods were analyzed. Video disks, audio tapes, and CD-ROM systems were looked at.

Internal Input

J&W has been a world leader in quality career education. The rapid growth of the university has required that a careful self-analysis and a strategic plan be developed. Robert E. Taylor, former director of the National Center for Research in Vocational Education served as a educational consultant to facilitate the Vision 2001 J&W's strategic plan for the 21st century.

The strategic plan was used to reinforce the need for interactive technology to link the branch campuses of J&W.

Faculty were frequently contacted for input to insure that the plan would meet the unique needs of J&W. Information gathered from research was shared with faculty members. As a result, faculty became better familiarized with interactive technology. Faculty members from other schools within the university were also interviewed. The input solicited from them provided many ideas how two-way interactive television could further be utilized within the university. Suggestions were made to offer all curriculum not only culinary via distance technology. Practicum properties could use teleconferencing as a marketing tool to attract business to use the hotel facilities run by the university.

Information gained from the J&W Culinary College dean and assistant dean provided specific information regarding the feelings toward technology by administrators within the university. The assistant dean and members of administration of the branch campuses also provided information as well as expressing a need for the plan.

External Input and Consultations

Consultations also took place with experts from outside of J&W. These persons were chosen for their experience with educational technology. Information was gathered from them which provided information regarding such issues as the effects of technology on their institutions. Some of the information received included various types of technology available to J&W which were important in deciding on which delivery system would be most appropriate to meet the specific needs of J&W.

George Connick (personal communication, September 24 and 25, 1992), president of the University of Maine Augusta, provided statistical information on the effects of two-way TV in Maine. The University of Maine's two-way interactive TV program has proven to be highly successful. Maine has increased enrollment in the State University system by over 3,000 students. Connick's opinions on the effect that the implementation of this technology would have on J&W were very important in justifying this plan to J&W administration.

William Mason (personal communication June 26, 1992), design evaluation consultant from the Aetna Educational Learning and Design Services, provided background information on distance education. Mason

provided materials that were used in the presentation on distance education describing the many educational technology options that were available to J&W. Mason also made himself available to answer any questions that arose pertaining to particular delivery systems and the development of distance educational delivery programs.

Doug Goodgame (personal communication, August 2, 1992), president Ed-Tech Systems College Station, Texas, provided information on educational technologies available to education today. The information received from Goodgame also was important in providing insight to many available technological alternatives during the presentation to J&W administration and faculty members. Goodgame data illustrated the capabilities of these technological systems.

Robert Arnold (personal communication, September 24, 1992), of the University of Central Florida, Orlando shared data on his experience over the last 25 years using two-way interactive television as a means to deliver education. This data showed the effect two-way interactive television has had on UCF's faculty and their opinions on delivering education via this medium. Arnold also provided information regarding a survey he conducted of faculty members at UCF. Arnold's survey

looked at the faculty involved in delivering distance education. The majority of the respondents all felt that teaching by two-way technology would require more thorough class preparation. A video on the University of Central Florida's program was also provided by Arnold. The video showed the effects that two-way interactive television has had on UCF over the past 25 years.

Pamela Pease (personal communication, September 24, 1992), of The Mind Extension University, (MEU) Englewood, Colorado, provided information on delivering college courses to students in their homes using TV. Pease's feelings regarding J&W's delivery of career education were very positive. She also stated that there is a strong market for non-traditional educational programing in this type of technology. MEU being a commercial network is constantly looking to add programming such as J&W's to their network.

Distance Education Models

Several institutions using distance education were contacted. The University of Maine at Augusta Center for Distance Education provided much data on their program. The impact this program has had on the State of Maine was very impressive. However, from a

technological point of view, Maine uses an ITFS system which has an effective range of no more than 25 miles.

Miles Community College (MCC) in Miles Montana was reviewed. The purpose of looking at MCC was to learn about the actual delivery of curriculum via interactive television. Furthermore, it was learned during this study that the distance technology used by MCC would apply to the needs of J&W. Miles used compressed video which utilizes the telephone lines to send the signal from one site to another.

The materials provided by Empire State College outlined many disciplines that are being taught by distance technology. Empire State College also uses many types of delivery systems to provide post-secondary education. Tapes, computers, and CD's are only a few of the options that the students participating in this program have available to them.

Two-Way Interactive TV Experts

Several experts in the field of distance education were interviewed because of their experience in the area of two-way interactive television and its use in education. Laura Lenau of Miles Community College of Miles Montana provided information regarding her experiences with two-way interactive television in the

delivery of nursing and allied health care programs. Lenau provided literature and photographs describing classes being delivered by two-way interactive television at MCC.

Lowell Roberts, professor in the distance education program at Empire State University of the State University System of New York explained his experiences with distance learning. Empire State University offers 18 accredited associate and bachelor's degree programs in business, liberal arts, nursing, and technology. Over 50 thousand students have graduated from this program.

Conference and Event Attendance

Practical experiences provided better insight as to the capabilities of various systems. The international conference at the University of Maine at Augusta entitled "Global Trends in Distance Education" (September, 24, 25, and 26, 1992) provided useful information relative to the implementation of two-way interactive delivery systems at J&W. The conference provided an opportunity to have conversations with many experts in the field of educational technology as well as observe first hand, classes being delivered to the entire State of Maine via the University of Maine

interactive television system. These observations answered many questions regarding the effectiveness of interactive technology. The time spent in the broadcast studio also allowed information to be gathered regarding the technical aspect of producing a class using interactive television.

Conversations with students at the University of Maine at Augusta participating in two-way interactive instruction also took place. These students offered a wide variety of comments regarding their experiences with this type of educational delivery system. The response by the majority of the students was extremely positive. Most of the students found it much easier to focus on this type of presentation. However, there were some students who felt that there were two many interruptions. The most common complaint was the time instructors took from their class answering questions from the branch campuses. This was accomplished by using an 800 number which students used to call in their questions. Data regarding the success and impact of this program was gathered for analysis during this study.

The Florida Vocational, Adult and Community Education Conference and Trade Show (August, 1992) in

Orlando, Florida, was also attended. Technology options currently available to J&W were examined at this convention.

Participation in several national town meetings was also valuable. Attending these town meetings provided the experience of actually taking part in live teleconferencing, while also discussing issues facing education in this country. The town meeting was downlinked to many sites around the country where educators and the public could take part. Cable TV companies provided access to these meetings for interested viewers who where not in areas chosen as meeting sites. Arrangements were made through a local cable company to downlink the signal for this study.

The attendance of several faculty and administrators of J&W at a teleconference on the topic of adult education allowed other members of the J&W staff to experience a live teleconference. Data collected and questions asked by participants gave additional support for the need to improve educational technology at J&W.

Vendors

Vendors representing many of the major companies who manufacture and supply distance educational delivery systems were available. Conversations with company

representatives and literature which they provided was very helpful. The data collected further explained the capabilities of many of the systems that are available to deliver curriculums by two-way interactive television today. This data after investigation indicated that there were several very effective educational delivery systems options. All of the options looked at have been used very effectively by post-secondary institutions around the world.

Several vendors were eventually contacted as a result of this study including GTE, Sony, AT&T, and Lane and Johnson. Representatives from these companies made on-site visits for the purpose of attaining data which would assist in the design of a two-way interactive television system. Proposals were received from several vendors contacted regarding this project. After careful study of all of the proposals submitted, GTE's plan appeared to be the best. Not only was the technology of higher quality than the other vendors but the plan also provided the most comprehen-sive package submitted by any of the vendors. The GTE plan provided for installation of the system, technical support to faculty and staff, maintenance after installation, and training for faculty in curriculum and program development.

These were unique components that were not provided as part of the services offered by the other vendors providing proposals to J&W.

The bids were received and analyzed for the purpose of making a recommendation to J&W President John Yena. Upon analyzing the bids, GTE Applied Campus Technologies appeared to be the best choice. The basis of this decision resulted from the fact that GTE provided a total package which would meet the perceived needs of J&W. The final decision would be made by President Yena upon completion of the plan.

Distance Education Plan

A plan was then developed to link the culinary colleges using distance delivery systems. The plan was developed after an extensive literature review, visits to colleges and universities already using distance technology, practical experiences, interviews with experts in the field of distance education, personal communication with J&W faculty and administration from both the culinary college and other schools within the university, and analysis of bids from vendors. The plan included five major sections: (a) how does two-way interactive TV Work?; (b) how could J&W use two-way interactive television?; (c) additional benefits to J&W;

(d) cost summary; and (e) comparison of teleconferencing technologies.

J&W Presentation

The implementation of this plan was accomplished by a presentation made to administration and faculty. The basis of the presentation revolved around the plan which was developed. The plan described how two-way interactive television worked. The plan also describes how J&W could use two-way interactive TV. The presentation described additional uses which included (a) live meetings between administration and faculty of all campuses, (b) simultaneous in-service training, (c) broadening the student body, (d) reduce the cost of the physical plant, (e) eliminate faculty shortages, and (f) live transmissions of presentations done at the main campus to all of the branches. Summary of costs for the implementation of the program was also described. Threats, which included finding enough faculty to volunteer to teach via this technology and technical difficulties and equipment breakdowns were also detailed. Finally, the comparisons of technologies available for distance education at J&W were delineated.

Validation of the Presentation

A questionnaire was developed with input from the culinary dean, assistant dean, and John Conklin of the University of Connecticut (Appendix B). The questionnaire was used for immediate feedback on the presentation. The recommendation was made after an initial review that an additional question be added to the questionnaire. The question which was added was, "Do you feel that the proposed distance education delivery system should be utilized to link the branch campuses of J&W? If no, explain why." The questionnaire was distributed to faculty and administration present at the presentation. The revised questionnaire was used to validate the presentation to faculty and administration. The questionnaire provided immediate feedback on the presentation of a plan for distance education delivery systems to link the branch campuses of J&W.

J&W Evaluation of Presentation

The questionnaire was immediately distributed upon completion of the presentation for the purpose of validating the presentation. There were 15 respondents present at the presentation who completed the questionnaire. The results of this questionnaire showed that 83% of the respondents owned a computer.

The results further indicated that 66% of those persons participating knew something about distance education. Finally, 100% of the persons who responded to the questionnaire felt some form of distance education should be implemented at J&W.

The final plan along with the results of the questionnaire were submitted to President John Yena. President Yena would then make a final decision on implementation of the plan.

Chapter 5

DISCUSSION, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

The purpose of this major applied research project was to develop a plan to link the culinary programs at Johnson and Wales University using distance education delivery systems. This was accomplished by using various methodologies to collect data. This chapter consists of discussions of results, conclusions, implications, and recommendations for the implementation of distance delivery systems options at J&W.

Discussion of Results

There were several areas of focus in reviewing the literature that were essential to the development of this project: (a) challenges facing vocational education, (b) distance education, (c) alternative delivery systems, (d) evaluation of delivery systems, (e) specific types of delivery systems, and (f) justification of distance education. Information gained through this literature review provided the theoretical framework for the study.

The review of literature indicates that there are some major challenges today facing vocational education. Vocational education, and perhaps all education, exists

to provide a skilled workforce for society (Groff, 1989). Providing skilled workers to meet the needs of industry is a key to any institution whose curriculum emphasis is providing its students with quality career education.

Another challenge facing vocational education is the shortage of qualified faculty. Vocational education unlike other disciplines, requires that faculty not only have pedagogical skills but also must have extensive industry experience. Finding solutions to these problems signals the need to find new means of providing quality vocational education.

As a result of trying to keep pace with the changing times, J&W needs to explore new ways to deliver education. Many types of alternative delivery systems currently exist. These programs have often been questioned by traditionalists as to their legitimacy and quality. Some of the most common characteristics of non-traditional programs have been their distant delivery systems, shorter residency requirements, flexible scheduling, independent study, and correspondence courses.

Alternative delivery systems have become more popular as a result of post-secondary education trying

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to meet the demands of the students of the 90's. These students are interested in practical, comprehensive, and flexible educational opportunities which are compatible with and not intrusive on their busy and demanding life styles. The delivery of distance education may be a means to accommodate the needs of these modern day students.

One characteristic that was notable in all of the programs that initiated some method of distance learning was the positive effect it had upon enrollment. This characteristic is very significant when trying to introduce a program of this type at any post-secondary institution. Over 1,500 colleges and universities in the United States are already using some form of distance learning using TV. For those schools who have limited resources consortiums may be the answer. The advantage of forming a consortium is that expenses are absorbed by several institutions and make delivering education in this manner more affordable.

The purpose of this study was to analyze various types of delivery systems. Some of the systems that were assessed involved the use of videos, audio cassettes, and interactive TV. The use of computer assisted education is also another system that has been

proven to be quite effective at a distance. However, after discussion with vendors, J&W administration and faculty felt the system that was most appropriate for meeting the needs of J&W was two-way interactive television. This system was chosen by J&W for further study. The reason it was of interest to J&W was the ability for immediate feedback on the part of the teacher and student. This is a critical concern when dealing with a curriculum that is as specialized as is J&W's.

The evaluation process is necessary, not only in distance education but in all forms of education, to insure students receive high quality education. Evaluation is defined as a process of making judgements or applying values in a given situation (Verduin and Clark, 1991). With little face-to-face contact with students, it is difficult for educators to gather information about learners, their needs, their wishes, and desires as in a conventional education program. Evaluating these programs can provide valuable information needed by (a) legislative bodies for licensing; (b) funding agencies to ensure financial support; (c) businesses for industry support; (d) colleges who may be interested in forming a consortium;

and (e) other clients such as students, to provide high quality education and assure their goals are met (Thorpe, 1988).

Evidence of the effectiveness of distance education further enhance its credibility. Major universities such as Penn State, Ohio State, and Colorado State University are offering distance education and all of these programs are highly recognized and have attained approval by all of the major accrediting bodies.

The faculty and administration were contacted frequently for input regarding the plan to implement a distance education delivery system at J&W. Input provided by faculty also coincided with the findings of J&W's strategic plan for the year 2001. Those members of the university involved in this strategic plan also voiced a need for some type of distance technology, when asked by Robert Taylor, the facilitator of the strategic plan.

Interviews with people from the University of Maine, Empire State College, Miles Community College, Aetna Educational Institute, J&W, SONY Corporation, GTE's Applied Campus Technologies, and other institutions were conducted informally. These opportunities

served as another major source of information. The individuals who were interviewed were chosen because of their experience in the area of distance education and technology.

All of these interviews were very beneficial to the study. Valuable insight was gained that will give evidence of the impact that delivering programs via two-way interactive television has had on all of these programs. All of the programs that were reviewed had experienced significant increases in their enrollment. The University of Maine's program also was able to increase the State of Maine's national ranking in the number of students graduating from high school continuing their education. Maine greatly increased the number of adults who enrolled in continuing education programs. Enrollment in Maine via two-way interactive television numbers 3,500 students. All of this has occurred in Maine in only three years time.

These statistics were very important when presenting this information to administrators at J&W. The costs associated with initiating such a program would be very substantial. The ability to increase enrollment at the university would help to substantiate the initial expense associated with interactive TV.

Personal participation in a distance learning conference, national educational teleconferencing provided by a local cable television company, a national teleconference on adult education, and participation in the electronic classroom of Nova University provided practical experience essential for the successful completion of this study. Visits to the University of Maine at Augusta and the Aetna Educational Institute in Hartford, Connecticut allowed for the study and analysis of programs already using interactive TV through direct experience.

The initiation of a two-way interactive television system was also discussed with several vendors. Technological needs as well as specific educational needs were discussed in order to best provide a system that would fit the unique situation of J&W's. Discussion also focussed on how to finance and administer the program. Projected start up costs from bids indicated that J&W could link all of the branch campuses for approximately $330,000 dollars. This was determined by a bid received from GTE Applied Campus Technology. Estimating an increase in the population growth within culinary program at approximately 10%, while using the present tuition costs of $8,500 per

year, would mean an increase in revenue the first year of $2.5 million dollars. Additional fees include phone charges which on an average of 10 hours per week over the 33 week school year would cost $11,800. The phone company also has a one-time hookup fee estimated at $1,592. Using these figures will determine how much money the university must budget in order to start up this system (Appendix E).

Once the system is in place, J&W must have an on-going system of evaluation and research. The assessment data would indicate the effectiveness of two-way interactive television. Research indicates competency tests could be administered by faculty and used as an outcome assessment to compare traditional students at J&W with those participating in the nontraditional mode. The results of this testing would be reported to the appropriate administrators and faculty for further evaluation. Should any problem arise, appropriate measures could be taken to remedy the situation.

The administration of the J&W college of culinary arts are willing to commit resources to this major research project. The new delivery system will solve the problems which have confronted J&W. The two-way interactive system will allow for unprecedented

growth for the university bringing quality career education to an untapped market.

The university will have more discretionary income. J&W will become the absolute arbiter in the food service and hospitality industry taking the tradition of vision and projecting it toward the future.

Conclusions

The first research question asked, "What delivery system options are available to J&W?" This question is considered to be the most comprehensive one of the study. The data gathered in response to this question determined the direction of the MARP. Literature review, examination of other institutions using distance education and technologies, interviews and consultations, and practical experiences were used to provide answers to this, as well as all of the research questions.

The following conclusions are presented in response to the first research question. The results indicate that there are many excellent delivery systems options available to J&W. These include microwave, cable television, and compressed video.

The second research question dealt with "What is the best option for J&W to meet their unique needs?"

After examining several models, it appears that some type of two-way interactive television system would be best suited to meet the needs of J&W. The results indicate that both compressed video and satellite are the only two options available to meet the unique needs of J&W. The immediate needs of J&W students, faculty, and administration could be met by choosing compressed video. This system would link the branch campuses and although expensive the costs are not as prohibitive as installing a satellite system (Appendix F).

The third research question addressed, "How J&W can use distance education to meet their needs?" A review of existing post-secondary programs using some type of distance education indicates that J&W could use distance education, specifically two-way interactive television to deliver equivalent high quality curriculum to all branch campuses. Distance delivery systems would help to eliminate the problem of faculty shortage. The best teachers could be used, which would allow students greater benefit from this experience. Administration could also satisfy the needs of the ever increasing adult population by offering programs via interactive TV that could be expanded to allow viewing in the home or

at hours other than might be considered normal by traditional standards.

The fourth and final research question asked, "How could a distance education option be introduced to administration for possible implementation and evaluation?" Discussion with administrators and experts resulted in the conclusion that the best way to introduce this plan for implementation would be to do a presentation. An immediate evaluation of the plan was accomplished through the administration of a questionnaire following the presentation. This provided immediate feedback regarding two-way interactive television as an alternative delivery system for J&W.

Implications

The implementation of a two-way interactive television system will add a new learning instructional dimension to J&W. The new two-way interactive television system will link all of the branch campuses allowing live two-way interaction when delivering classes between campuses. Students will have the option of choosing this type of delivery system as an alternative to traditional modes of instruction.

All of the programs which are currently offered at the main campus in Providence, Rhode Island will now be available at all of the branch campuses of J&W. This means of delivery will eventually open up many more options for J&W. Should future expansion include incorporating satellite systems as part of this technology, this would make education possible for individuals whose geographic, personal, and career obligations currently do not allow for them to pursue a college degree, at a pace conducive with the modern lifestyle.

The introduction of high-technology would allow J&W to come of age as a leader in quality career education. J&W would also have the opportunity to gain even greater worldwide recognition as the leader in the area of hospitality education, and improving their status among their peers.

Recommendation for Implementation

The recommendation for implementation will consist of training to implement the program. It is recommended that J&W provide a comprehensive training program for those faculty who will be working with technology. As a result of this study, it is recommended that the training be provided by the same company which is

providing the system. By doing this, the transition could be smooth and those involved with the training would be most familiar with the types of equipment being used. It is further recommended that all faculty involved in the delivery of education by two-way interactive television volunteer for the program. Research by distance education experts (Arnold, 1992) indicates that the greatest success working with this model was achieved when faculty members volunteered to do so.

During this training program, it is recommended that faculty begin gathering information on distance learning, successful program case studies, and the critical planning process to administer and carry out a quality distance learning program. This program will be designed to preview sample video programs from providers plus (a) exhibit and experience various technologies; (b) discuss criteria for a successful distance learning program; (c) jointly design a distance learning planning model for implementation and discussion; (d) involve the faculty and administration in using this model for enhanced distance learning planning; (e) encourage selection of proper steps, time lines, and personnel for implementing this program; (f) identify the teams

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necessary to support the program; (g) develop and encourage a continued leadership and enthusiastic spirit among faculty and administrators as a successful team to build and launch a distance learning model; and (h) provide an opportunity for faculty, administrators and students to share ideas and concerns in an open forum as part of the planning process. Also during this program, participants will receive instruction on course development for two-way interactive television.

Data analyzed for this study shows that preparation for the delivery of courses by interactive TV is much more intense than that of traditional education. Also courses planned for traditional education do not always work well when delivered by this technology. However, courses prepared for this technology are very adaptable in a traditional setting.

The recommendation was also made that GTE Applied Campus Technologies be the vendor chosen by J&W. Responsibility for the equipment, installation, and training of J&W personnel would be that of GTE's consultants and staff.

Recommendation for Dissemination

The results of this study will be disseminated in several ways. Copies of the study will be made available to the Dean of the J&W College of Culinary Arts and to the President of J&W. Providing the information to the dean and president will insure that the information will be shared with other members of the university. These individuals may also have input which may indicate other useful applications for the television system which could benefit the university.

External dissemination will include informing members of industry through articles placed in appropriate trade journals. The Educational Institute of the American Culinary Federation will also be notified for a possible presentation on technology in culinary education. This presentation would be delivered at the national convention. The Commission of Hotel Restaurant and Institutional Educators (CHRIE) would be contacted for a presentation at their annual convention also. The CHRIE conference, the largest of its kind, would be an excellent opportunity for J&W to showcase the culinary program before several hundred representatives from post-secondary colleges and universities from this country and around the world.

Recommendation for Improvement of Practice

Once the program is initiated, it will be important to provide constant evaluation of the program. Research into the success of the program would be accomplished by outcomes assessment. J&W's use of a competency-based learning style allows for faculty to immediately assess a student's proficiency in special areas of instruction. By monitoring all students in the culinary program a comparison can be made between the traditional students and those students participating in the distance two-way interactive television educational delivery system.

Should there be any disparity between the two groups, appropriate action by faculty and administration would take place immediately to remedy this situation. It is the intention of all J&W faculty and administrators that equivalent education be afforded to all students regardless of the technology involved.

There is much data available today that indicates that the failure of many post-secondary institutions to adapt to change resulted in their demise. Assuming that the two-way interactive delivery system proves successful for J&W, consideration must be made for future growth. The on-going evaluation and research

would act as a barometer to help provide ideas by which J&W could expand this program. Eventually, a need to also use a satellite network may be a possibility. Already data has been compiled into the costs of using a satellite to transmit programming (Appendix F). The costs, however, are prohibitive at this time, and research indicates that the delivery of courses by compressed video should be perfected by faculty before implementing any other technologies at J&W.

The implementation of two-way interactive television at J&W will be an important step toward achieving the "Vision 2001." Recommendations will be made at university meetings that other colleges within the university look at the culinary college as a model. A plan then could be created for all the colleges within the university to adopt this technology, if they so desired, which would broaden their student base.

The intention of members of the culinary administration and faculty is to include students and faculty from the technology college to participate in the program as soon as possible. Recommendations have been made to use this program as a practicum or work study for these students. Their function as engineers and technicians in the control rooms while overseeing

the broadcasts of classes would provide them with a valuable hands-on training while also broadening their educational experience.

The suggestion also will be made to make the College of Culinary Arts responsible for promoting the program. Culinary administrators would be responsible for developing an informational seminar for interested members of the university. This could possibly be an adaptation of the original presentation that was delivered to administration for the implementation phase of this major applied research project.

The plan, if adopted by other colleges within the university, would still remain under the direction of the College of Culinary Arts. The reason is that since the College of Culinary Arts is the main college with branch campuses, the majority of the broadcasting would be involving culinary programing.

The College of Culinary Arts will commit fiscal resources to implement the new program. Industry support will also be solicited to help defray the costs. In addition, industry will also be encouraged to use the facilities to hold corporate training sessions. Fees for this service would be directed towards reducing J&W's operating expenses. Monies will also have to

be delegated for instructional materials, telephone and postal expenses, development of classes to be delivered by two-way interactive television, and the marketing of the program outside of the university.

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APPENDIXES

APPENDIX A

Letter of Administrative Support

JOHNSON & WALES
UNIVERSITY

8 Abbott Park Place
Providence, Rhode Island 02903
(401) 456-1000

COLLEGE OF CULINARY ARTS

September 21, 1992

Paul G. VanLandingham
330 Harborside Blvd.
Providence, RI 02905

Dear Paul:

The objective in writing this letter is to verify the College of Culinary Arts need for research in two-way television.

The College of Culinary Arts presently has four campuses in: Providence, RI; Norfolk, VA; Charleston, SC; and North Miami, FL. We are currently developing two new programs: a Bachelor of Science Degree in Culinary Arts and a Bachelor of Science Degree in Food Science.

With the four campuses delivering the same curriculum it is imperative that communication systems be of the highest quality and spontaneous to the needs of the college. The two-way television system may be the instrument that will fulfill that need.

Your research in the different methodologies of communicating curriculum through the two-way television system is critical in the adoption of this system.

I look forward to working with you and reading your thesis.

Sincerely,

Paul J. McVety

Paul J. McVety
Assistant Dean
Johnson & Wales University
College of Culinary Arts

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APPENDIX B

Administrative Questionnaire

Directions: The following questions concern your knowledge of technology relative to your work setting. There are no right or wrong answers. Please mark answers as follows:

U = Unfamiliar; never used this
F = Familiar; have occasionally used this
VF = Very Familiar; have used many times

1. Following the session on distance education, how familiar are you with the following media?
   a. Do you know what "distance education" is? U F VF
   b. How familiar are you with telecommunication use for the satellite transmission of live conference and seminars? U F VF
   c. Are you familiar with "e-mail" (electronic mail)? U F VF
   d. Are you familiar with two-way interactive television? U F VF

2. Do you own a computer (check)? Yes☐ No☐
   a. In reference to computers and their use, I am U F VF
   b. Have you used a modem? U F VF
   c. I am most familiar with the following computer: (*name*)
   d. I am most familiar with the following software: (*name*) _____

3. What types of technology does your campus use to deliver culinary curriculum? Please circle "Y" for yes and "N" for no.
   a. They use audio tapes for teaching. Y N
   b. They make audio tapes for teaching. Y N
   c. They use video tapes for teaching. Y N
   d. They make video tapes for teaching. Y N
   e. They use video tapes made by your school for field teaching. Y N
   f. They use a fax machine. Y N
   g. They use electronic mail. Y N
   h. They use voice mail. Y N
   i. They use computers. Y N
   j. They use modems. Y N
   k. They use compact disc, read only memory (CD-ROM) technology for literature searches. Y N

4. Do you feel that the proposed distance education delivery system should be utilized to link the branch campuses of J&W. If no, explain why. Y N

_____
_____
_____

5. Additional comments on the use of technology and the possible utilization of technology at J&W's campuses to enhance the delivery of our culinary curriculum.

_____
_____
_____

APPENDIX C

Distance Education for Johnson and Wales

DISTANCE EDUCATION

FOR JOHNSON & WALES UNIVERSITY

PAUL G. VANLANDINGHAM

FEBRUARY, 1993

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Yesterday's future is here today ...today's will be here tomorrow. Today's technology gives us options that were unavailable five years ago. Technology and new knowledge in this country are being created at an alarming rate. The following are examples of changes that have taken place in technology:

1. Half of what a person learns is no longer valid when they reach middle age.

2. One-third of the items on the supermarket shelves did not exist ten years ago.

3. Half of the labor force earns its living in industries which did not exist when the country began.

4. Three-fourths of all people employed by industry 12 years from now will be producing goods and services that have not even been conceived as of today.

5. More mathematics has been created since 1900 than during the entire preceeding period of recorded history.

6. Half of what a graduate engineer studies today will be obsolete in 10 years; half of what he or she will need to know is not yet known by anyone.

Dr. Robert Taylor, facilitator for "Vision 2001", when presenting the question "What Ideas Might Transform The Business?" concluded that 19% of the respondents at the November 20, 1992 strategic planning meeting felt that TV/long distance learning to be a very important part of J&W's future.

The following information hopefully will give some ideas as to the many options available to J&W as a result of changing technology. Applicability of the technologies will also be explained.

Johnson & Wales mission statement "to meet the needs of students and employers in fields with high growth potential that prepare students to contribute significantly to society." Combine this with the demographic changes occurring in this country and J&W would provide the perfect setting for the delivery of distance education.

Dr. Taylor, Dale Parnell, John Naisbitt, and many other futurists recommend having a *strategic plan* to assist in guiding J&W into the future. Johnson & Wales must have a plan that is dynamic yet realistic. This plan could include the integration of high

technology. The use of distance delivery systems links quality career education with a new clientele.

Currently many types of technology exist (Appendix A). Technology such as computer assisted education, FAX, CD-Rom, video, and interactive television exist. Dr. George Connick pioneered such a program for the Maine university system involving two-way interactive television, home-based at the University of Maine at Augusta. In Maine, 85% of the state's population has been brought within a 15-minute drive of a remote campus or distance learning site. A whole new infrastructure for education has been created without investing in a single new building.

Dr. Connick stated (personal interview September 24, 1992) that J&W's programs would be ideally suited for two-way interactive television. The importance of having direct contact with students and providing instant response is most effective. Two-way interactive TV would provide the best means of achieving this.

Two-way interactive television allows for both the students and the instructors to have two-way audio and sometimes two-way video while participating in a class. J&W still can maintain our same academic objectives while implementing this type of technology.

The delivery of courses at a distance by use of interactive technology is not new. Technology such as this has been around since the 1960's. The British Open University (BOU) currently enrolls over 150,000 students via two-way interactive TV. The faculty of BOU is made up of professors who are considered the best in their respective fields. They are well respected within the European educational community. The graduates of this program have also proven themselves to be highly qualified and are regarded as equals with graduates of Oxford and Cambridge Universities.

How Does Two Way Interactive TV Work

One of the best ways to show how interactive television works is to look at the enclosed example (Appendix B). Each classroom is equipped with several cameras and microphones. Monitors are also in place at the front of the classroom allowing both the live class and those students at the remote sites to observe each other and to communicate as they would if they were at the same location.

HOW COULD J&W USE INTERACTIVE TELEVISION

In this handout is a diagram of all of the sites in which we are presently involved, connected by two-way television (Appendix C). Some of the ways interactive TV could be utilized to improve our existing programs are:

- Live meetings with administration from all of the campuses which would cut down on travel expenses.
- Simultaneous in-service training to all faculty regardless of where they are located.
- Broadening our student body by transmitting to remote areas of the world and offering courses to anyone who has access to a satellite dish, or taping all classes and providing those students who do not have access to live interaction a taped programming for an additional fee.
- Reduce costs of the physical plant at all campuses.
- Eliminate staffing shortages and allow expert faculty members to expand there knowledge to a larger audience which would only improve the image of the institution.
- Live transmission of the distinguished visiting chefs, business, and hospitality executives to all branches.
- Make taped copies of lectures to be used for review by students and faculty.
- Admissions could use this to market J&W worldwide.
- Administration could also use technology as a tool to link various areas around each campus.
- Businesses could rent time on our network which would reduce, if not cover, the universities use of the system.
- Practicum hotels could market the conference capabilities, which would make using our hotels more attractive to industry and the private sector.

ADDITIONAL BENEFITS TO J&W

On January 15, 1993 Vice President Manny Pimental addressed the university faculty. The topic of his presentation was "J&W Student...A Reality Check...Where Do We Go From Here?" Vice President Pimental made it very clear that over the years he has documented the main reasons why students after being accepted decide not to attend J&W:

1. Location in the City of our campus.
2. The city of Providence.
3. Lack of campus.
4. Finance.

Two-way interactive television, or some other type of distance technology could, possibly allow these students to pursue a college degree without relocating.
Furthermore, Vice President Pimental stated that 60% of our students come from outside of a 300 mile radius. This could mean that there are many others who do not apply because of the distance, and who might otherwise enroll at J&W.

In addition, Dr. Yena addressed the topic of Vision 2001. Several areas were addressed which have reached their cap for further financial expenditure. First, academic costs could be lowered through the implementation of distance education. After the initial start-up costs, the overall costs become significantly less.

Second, facilities costs are drastically reduced because the students don't have to be physically present. The need to provide housing for students is reduced. This means fewer dorms and dining facilities. Third, personnel costs are less. While the student body would increase, the faculty positions would not be lost since those faculty members who would be involved in the delivery of distance education would have a greater student faculty ratio. This would be the result of the ability to reach a larger audience via interactive television.

Fourth, the implementation of interactive TV could be utilized by admissions to increase enrollment. This type of program could be marketed to working adults whose demanding schedules might not otherwise allow them to further their education.

All of these costs could be positively affected by the implementation of two-way interactive televeision. The end result of this implementation would be an increase in surplus revenue, which could be utilized in other areas.

A projection of an increase in culinary enrollment of 10% may be conservation if a two-way interactive educational delivery system is implemented. Roughly, this would mean an additional 300 students. Using a tuition based on a figure of $8,500.00 would mean an additional $2,500,000.00 per year.

COST SUMMARY

Research of several vendors has provided a rough estimate of the costs

to implement two-way interactive television, linking our branch campuses to the Providence campus.

The use of compressed video would also mean additional charges for the use of the phone lines. There are one-time fees that the phone company charges for linking the system to the phone line. The non-recurring charges for 112 Kilobytes per second (KPS) is $1344. For 389 (KPS) the charge is $1592. Hourly fees of $37 per hour for 112 KPS and $57 per hour for 384 KPS.

The difference between 112 KPS and 384 KPS is clarity. The higher the pulse per second the clearer the picture. We also could have the option of band width on demand. For cooking demonstrations we could use 384, and for regular conferences use the 112 KPS.

Providence, Charleston, North Miami, and Norfolk could be equipped for $320,000. An average of ten hours per week for 33 weeks for three trimesters using 112 KPS at $36 per hour would cost roughly $11,880.

$2,500,000	Tuition for 300 students
-330,000	Cost of system
-11,880	Phone charges for 330 hours
1,592	Non-recurring hookup fee
$2,156,528	Net Profit minus salaries

THREATS

1. One of the biggest problems research has shown facing administrators is finding enough qualified faculty members willing to change teaching styles. The switching to interactive television as a educational delivery system sometimes threatens faculty who have become comfortable and are not ready to change. The greatest success occurs when faculty volunteer to become a part of this program.

2. Another problem that may have to be addressed are technical difficulties and equipment breakdown.

SUMMARY

The implementation of two-way interactive television at J&W would bring faculty and administration from all of the colleges in the university together. The College of Culinary Arts, The Hospitality College, Business College, School of Technology, and practicum properties could all be involved in course delivery through interactive television. The School of Technology could play a vital role from a technical aspect, using students

as technicians and work study students running the control room during production.

Other majors, such as communications and media production, could also result from this program. Outstanding faculty members would get instant recognition for teaching excellence.

The university will have more discretionary income, and Johnson & Wales will become the absolute arbiter in the Food Service and Hospitality Industry. We must take our "Tradition of Vision" and project it towards the future.

Comparison of Teleconferencing Technologies				
	Audio Conferencing	Audiographic Conferencing	Video conferencing	Business Television (BTV)
Configuration	Point-to-point or multipoint, multiple sites.	Point-to-point or multipoint, two or several sites.	Point-to-point or multipoint, two or several sites.	Point-to-multipoint with multiple receive sites.
Primary Uses	Meetings requiring verbal exchanges. Training sessions; interaction with instructors.	Meetings requiring verbal instruction, exchange of documents, drawings, charts.	Meetings requiring motion images of participants or activities.	Training sessions; informational or motivational events.
Video Capability	None	Still video, one direction at a time.	Motion video, usually two directions at any given time.	Motion video, one direction from origination to sites.
Audio Capability	Fully interactive.	Fully interactive.	Fully interactive.	One way from origination to receive sites; optional return audio via phone lines.
Closely Resembles	Telephone conversation.	Between telephone and in-person meeting.	In-person meeting.	TV show.
Transmission	Analog, usually terrestrial.	Analog or digital, usually terrestrial for domestic connections.	Usually digital, via terrestrial or satellite channels.	Analog, almost always via satellite.
Cost	Equipment, $100 to $7,000 per site; transmission, standard telephone connection rates; bridging services, $30 per site per hour.	Equipment, $3,000 to $50,000 per site; transmission, standard telephone connection rates, or digital data rates; bridging services additional.	Conference systems, $7,500 to $3,000,000; codecs, $30,000 to $80,000; transmission, $50 to $1,000 per hour.	Receive site equipment, $4,000 to $10,000; satellite transmission, $600 and $2,500 per hour for U.S. and Europe/international systems, respectively; $300 per hour for fixed uplinking services; production costs vary.
Special Strengths	Readily available equipment and transmission facilities; least expensive of the teleconferencing technologies.	Readily available transmission; excellent merging of video and computer technologies.	Ability to interact visually in real time; can use videotapes and typical meeting media; growing number of public and shared facilities.	Transmit uniform messages simultaneously to large audiences; low cost per person reached.
Limiting Factors	Inability to share visual images. Bridge access limits yard- sticks. Ties up phone.	Equipment incompatibility. Ties up phone.	Equipment incompatibility.	Special resources for program production.
Typical Users	All business enterprises, education/training.	Engineering, architecture, design, creative services, medicine, education.	Aerospace, defense contractors, energy, banking, manufacturing (pharmaceutical, computer, auto; high tech); insurance.	Financial services; retailing, manufacturing (auto, computer, high tech); education, training.
Other Advantages	Tape and playback for absentees. Access from any telephone.	Save changes to design documents on computer.	Tape and playback for absentees. Many downlinks. Scramble for security.	Tape and playback for absentees. Many downlinks. Scramble for security.
Participant Materials	Mail, E-mail, or FAX materials before conference.	Mail, E-mail, or FAX materials before conference.	Mail, E-mail, or FAX materials before conference.	Mail, E-mail, or FAX materials before conference.

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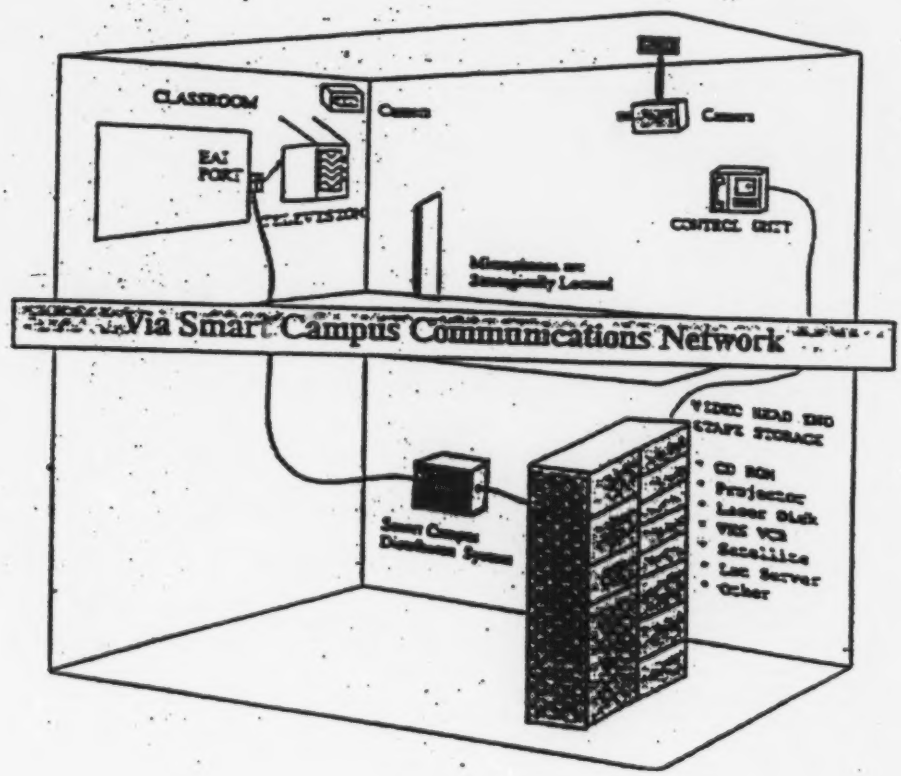
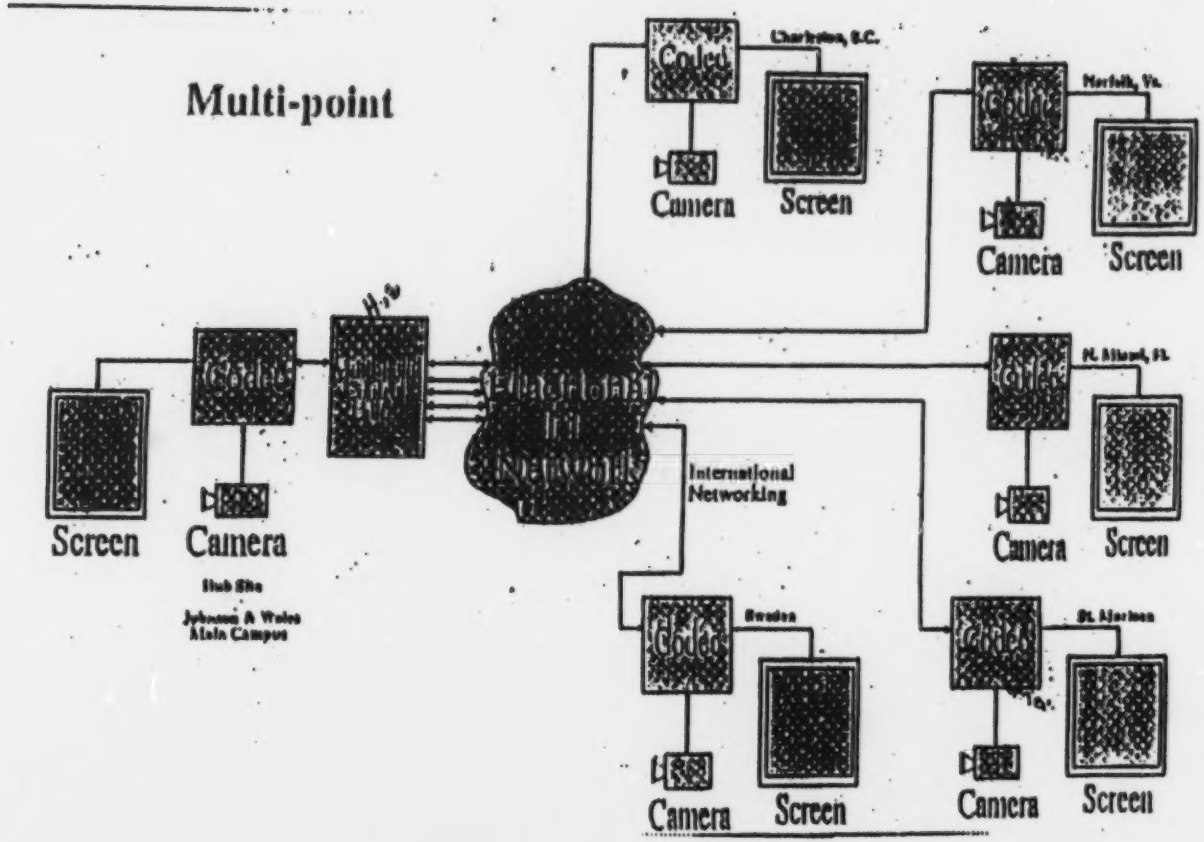
DISTANCE EDUCATION FOR JOHNSON & WALES UNIVERSITY

VIDEO CLASSROOM ACCESS

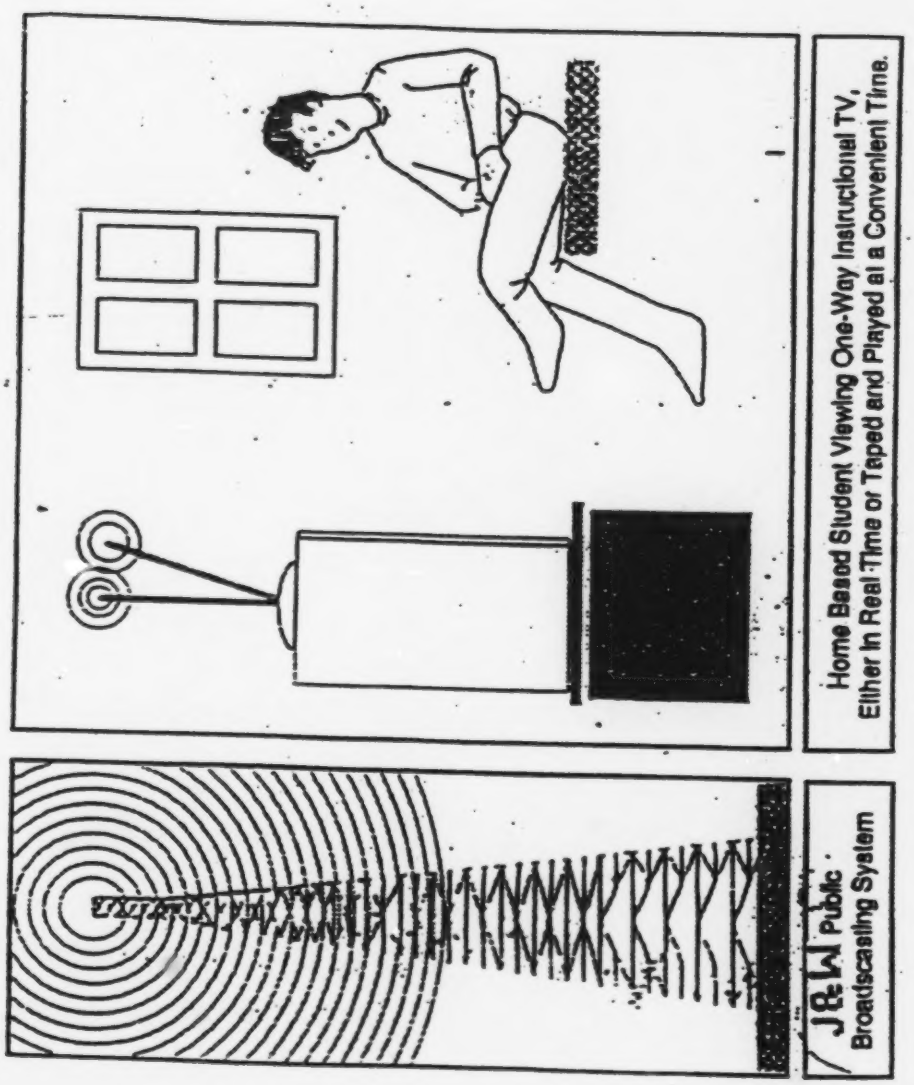


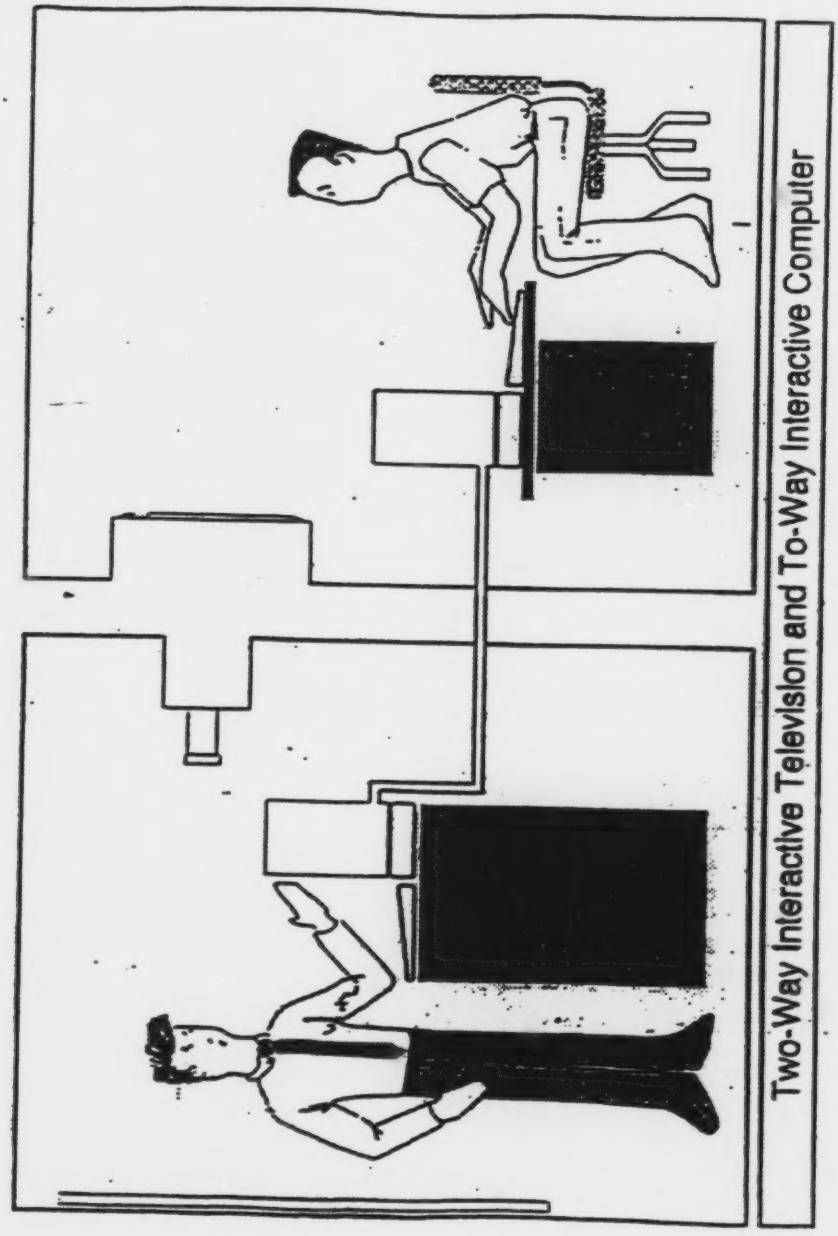
- Multimedia retrieval for educational support.
- Video capture of lectures and special events.
- Scheduled rebroadcast of video archives.
- Closed circuit video distribution to classroom and residence halls.
- Two-way interactive classroom conferencing.
- Access to a larger student body.



CLASSROOM VIDEO CONFERENCING

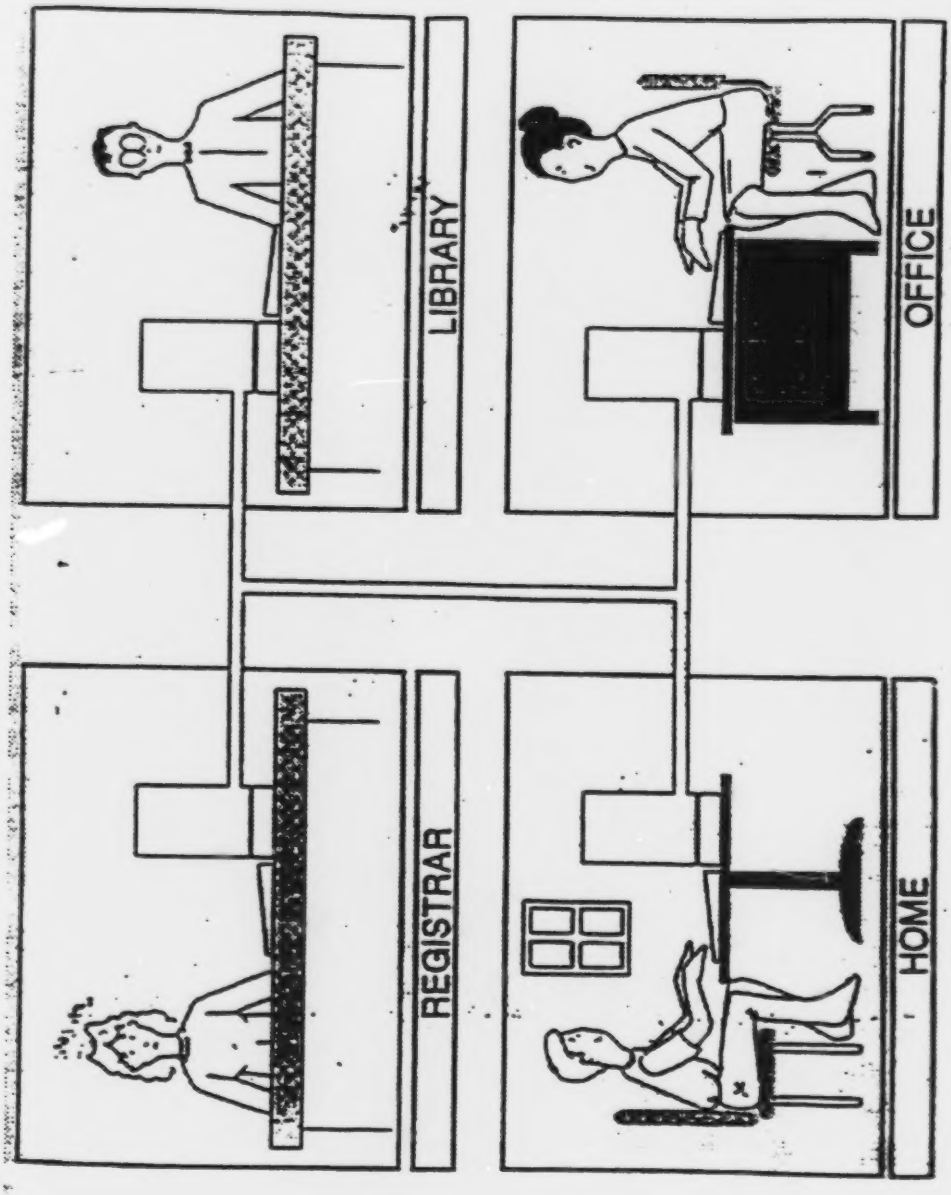
PAUL VANLANDINGHAM


Home Based Student Viewing One-Way Instructional TV,
Either In Real Time or Taped and Played at a Convenient Time.
J&W Public
Broadcasting System



Two-Way Interactive Television and To-Way Interactive Computer

DISTANCE EDUCATION FOR JOHNSON & WALES UNIVERSITY



PAUL VANLANDINGHAM

COST FACTORS

$2,500,000	Tuition for 300 students
-330,000	Cost of system
-11,880	Phone charges for 330 hours
1,592	Non-recurring hookup fee
$2,156,528	Net Profit minus salaries

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APPENDIX D

Administrative Letters Regarding Presentation

JOHNSON & WALES
UNIVERSITY

8 Abbott Park Place
Providence, Rhode Island 02903
(401) 456-1000

COLLEGE OF CULINARY ARTS

MEMORANDUM

To: Paul VanLandingham
From: Thomas L. Wright
Subject: Distance Education for Johnson & Wales University
Date: February 22, 1993

I want to congratulate you on the fine job you did in completing your long-distance learning summary. There are many thought-provoking ideas and concepts which we can all look forward to brainstorming in the future.

Again, on behalf of the administration of the University, I would like to extend to you our wish for continued success as you work towards completion of your graduate degree.

JOHNSON & WALES
UNIVERSITY

8 Abbott Park Place
Providence, Rhode Island 02903
(401) 456-1000

COLLEGE OF CULINARY ARTS

MEMORANDUM

RECEIVED
FEB 23 1993
EXECUTIVE V.P.

TO: JOHN BOWEN

FROM: PAUL MCVETY

DATE: FEBRUARY 22, 1993

SUBJECT: LONG DISTANCE LEARNING

Dear John:

Here is Paul VanLandingham's report on long distance learning. I am looking forward to your comments.

Paul McVety

Paul —
Very impressive study.
Did you send this to
1) FAST
2) BUDGET OFFICE
3) Dr. Kosik ?

JOHNSON & WALES
UNIVERSITY

8 Abbott Park Place
Providence Rhode Island 02903
(401) 456-1000

SCHOOL OF ARTS AND SCIENCES

March 2. 1993

TO: Paul McVety

FROM: Tom Farrell
Dean - School of Arts and Sciences

RE: Distance Education

Congratulate Paul VanLandingham for me on his report on Distance Education at J & W. I share his enthusiasm about future possibilities.

Be assured that Arts and Sciences faculty would be willing to contribute and participate wherever needs were identified. Thank you.

APPENDIX E

Cost Factor for Compressed Video *

384 Kilobytes Per Second

$2,500,000	Tuition for 300 potential students
-330,000	Cost of system for all campuses
-1,592	Non-recurring hookup fee
-7,776	12 month service charge (Phone Company)
-28,080	Phone charges for 520 hrs (10hrs per week)
$2,132,552	Net Profit not including salaries

112 Kilobytes Per Second

$2,500,000	Tuition for 300 potential students
-330,000	Cost of System for all campuses
-1,300	Non-recurring hookup fee
-3,600	12 month service charge (Phone Company)
-18,720	Phone charges for 520 hrs (10hrs per week)
$2,146,380	Net Profit not including salaries

* Cost factor as calculated March 1993.

APPENDIX F

Cost Factor for Satellite Broadcasting *

$2,500,000	Tuition for 300 potential students
-330,000	Cost of system for all campuses
-375	Pre-broadcast 1 hr test
-800	Coordination of Downlink Sites
-750	Rental time off satellite (1hr)
-1,775	Transportable uplink truck
$2,166,300	Net profit not including salaries for one broadcast plus equipment setup

$2,500,000	Tuition for 300 potential students
-330,000	Cost of system for all campuses
-19,500	Pre-broadcast test for 52 weeks (1hr each)
-41,600	Coordination of downlink sites for 52 weeks
-39,000	Satellite rental time 520hrs (10hrs per wk)
-92,300	Transportable uplink truck rental 52 weeks
$1,977,600	Net profit not including salaries

* Cost factor as calculated March 1993.

BIOGRAPHICAL SKETCH OF STUDENT

Paul VanLandingham was born in Fall River, Massachusetts where he attended a private elementary school. At the age of 13 he entered Bishop Stang High School in North Dartmouth, Massachusetts graduating in June of 1966. Mr. VanLandingham then attended the Culinary Institute of America receiving an Associate of Occupational Studies degree in June, 1969. He then attended the University of Massachusetts in Amherst majoring in hotel and restaurant management.

After leaving the University of Massachusetts in 1970, Mr. VanLandingham began an apprenticeship as a baker under Thomas Marcucci in Fall River, Massachusetts. He then became the sous-chef at the Sheraton Goat Island Newport, Rhode Island in the fall of 1972 until he was asked to become chef/manager of the Dunes Hotel and Restaurant on the Island of Martha's Vineyard.

Mr. VanLandingham left the Dunes to become chef supervisor of the Wayside Inns, a restaurant group located in the Jupiter, Florida. He remained in this position until February 1978 when he made a career change joining the Massachusetts State Police. During his time with the state police he was transferred

to Martha's Vineyard where he had previously worked as a chef and he began teaching part time in the vocational culinary arts program at Martha's Vineyard Regional High School (MVRHS). Mr. VanLandingham returned to school and received a Bachelor of Science degree from Roger Williams University in Bristol, Rhode Island in May of 1982. He then enrolled at Anna Maria College in Paxton, Massachusetts where he completed his master of arts degree in May of 1983.

Mr. VanLandingham took a position as chef in April of 1986 at the Edgartown Heritage Hotel. While he was chef at the Heritage Hotel he completed the necessary courses at Fitchburg State College for Massachusetts vocational culinary arts teaching approval. He was hired in July of 1988 to be the director of the vocational culinary arts program at MVRHS.

Mr. VanLandingham left MVRHS to assume the position of chef instructor at Johnson and Wales University (J&W) in Providence, Rhode Island in August, 1989. Since that time he has furthered his education by becoming certified as a Certified Culinary Educator and Certified Executive Chef through the American Culinary Federation in March of 1991. He was promoted to the rank of assistant professor in September of 1990. Additional

certifications were achieved as a Foodservice Management Professional through the Educational Foundation of the National Restaurant Association on May 10, 1992 and Certified Food and Beverage Executive through the Educational Institute of the American Hotel and Motel Association.

Mr. VanLandingham was promoted again in September, 1992 and currently holds the rank of associate professor. Some of the special projects that he has been involved in at J&W are the development of a BS degree program in culinary arts along with extensive research in the area of two-way interactive television as a means to deliver quality career education.

Mr. VanLandingham has also written papers on the evolution of vocational culinary education along with publishing articles relating to the culinary industry. He is presently working on a committee whose goal is to link all of the campuses of J&W via two-way interactive television.

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